

LAND USE DATA COLLECTION

by the

FOREST SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

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Northeastern Forest Experiment Station  
Forest Service-U.S. Dept. of Agriculture

February 1963

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USDA

- - - Preface - - -

The Forest Service has been collecting data on land use since it was established in 1905. Most of the data gathered has been associated with management of the National Forests but the Nation-wide Forest Survey is an example of more wide-spread activity. This report highlights current land use data collection activities of the Forest Service. A wide range of related information such as forest fire statistics; detailed recreation use statistics; reforestation and timber stand improvement data; and road and trail mileage is not included. A list of materials is included to illustrate the scope of some Forest Service land use data collection activities.

The Forest Service cooperates closely with other USDA agencies in compiling comprehensive land use reports and interpreting land use data to formulate basic policy relating to land use adjustments, development of resources, land classification, or similar matters. States, industries and other private land owners cooperate in gathering data on forest resources, forest uses, and forest protection.

The necessity of having reliable land use statistics have been amply demonstrated in Forest Service experience. Periodic national appraisals of the current and prospective timber situation have been used to guide program planning and to set basic forest policy. Recreation use data on the National Forests have been essential to set the framework of an appropriate resource development program. Timber inventories provide the basis for establishment of critically important cutting cycles for harvesting National Forest timber

products. Range surveys have been essential in planning and executing rehabilitation work on National Forest grazing land. Analyses of Forest Survey data have guided the location and development of wood using industries in many cases. Snow surveys have provided vital data in critical western watersheds and soil surveys have strengthened land stewardship in areas with critical erosion potential.

The Nationwide Forest Survey provides up-to-date information on the use of one-third of the Nation's land area or that portion classified as forest land. Basic forest resource facts include ownership of land and timber; character and condition of forest land; kind, volume, quality, and location of standing timber; amount of timber grown and amount lost due to fire and other natural causes; amount and kind of timber cut for timber products. These facts are provided by States and counties. In some instances they are accompanied by maps on which forest and other types of land are shown in place.

There is both commercial and noncommercial forest land. Commercial refers primarily to timber producing land while noncommercial generally refers to lands unsuitable for commercial timber production. Some forest land is set aside exclusively for recreation as in the National Parks or primarily so as in National Forest wilderness areas. Most is devoted to more than one use.

Repeat surveys are made for most States about every 8 or 10 years. Reports feature the present situation and changes between surveys. About every 10 years the data for all States are brought up to date in a national reappraisal report which takes stock of our timber situation. The purpose is to provide guides for forest policy -- both public and private -- on a national, State, and local basis.

Another phase of land use data collection by the Forest Service relates specifically to the 186 million acres of National Forests and National Grasslands which it administers. Virtually all of these lands are open to public use in one form or another. Administrative restrictions are few and where they do occur, reflect considerations of fire prevention, public health and safety, or similar aspects of resource or visitor protection.

A wide range of climatic, biologic, topographic, and other conditions exist on the National Forest System offering great diversity in public use and posing a wide array of problems for management. Data are collected on a host of activities for general purposes of resource planning and the development of detailed management plans. These data vary greatly in kind, intensity, and frequency of collection. Usually involved is a type of information directly related to the functional pattern of resource management. Much of the information secured comes from periodic reporting and special surveys having as their purpose the description of current conditions on the land, the determination of relative usefulness of given areas of land, the definition of land development needs, or the establishment of significant trends in land conditions.

The production of public values in outdoor recreation, timber, grazing, wildlife, and mining creates use data and other pertinent information generally published annually in the Chief's Report to the Secretary of Agriculture and other reports and publications.

Timberland data for example commonly includes the area of land administered, the amount of commercial forest area and useful timber

volume, volume and value of timber cut, and the area planted and seeded to trees. Grazing statistics are maintained on the number of permits in effect on the System lands and the types, kinds, and quantities of livestock grazed. Outdoor recreation use by type of facility and kind of activity is regularly reported. And in wildlife use of National Forest lands estimated harvest numbers of game animals, areas of habitat improvement completed, and similar information is available. Mining claims and oil and gas lease permits are recorded also because of the large areas subject to mineral location and entry. All of these data relate to some phase of land use on the National Forest System.

The Forest Service has long advocated the principle of multiple use of lands and resources. Public Law 86-517 specifically directs that the National Forest System be managed for multiple use and sustained yield of all surface resources. The establishment and maintenance of areas of wilderness are consistent with the purposes and provisions of this Act.

Much of the Nation's public and private land has long been used for more than one purpose and multiple-purpose development of water resources is generally accepted. Improvement of cropland, pasture, and forest management will benefit watershed runoff and water quality. Much can be done on private lands to improve wildlife habitat and develop recreation as an income producing enterprise to supplement other sources of farm income. Possibilities for further encouraging the multiple use of private lands are particularly significant. Any collection of land use data should clearly reflect the multiple nature of such uses wherever appropriate.

## CONTENTS

	<u>Page</u>
PREFACE . . . . .	i
THE NATIONWIDE FOREST SURVEY . . . . .	1
I. Introduction . . . . .	1
A. Purpose and Scope . . . . .	1
B. History . . . . .	2
II. Planning and Coordination . . . . .	5
III. How the Survey of Timber Supplies is Done . . . . .	6
A. Photo Interpretation . . . . .	6
B. Field Sampling . . . . .	7
C. Automatic Data Processing . . . . .	9
IV. Ownership of Land and Timber . . . . .	10
V. Timber Losses . . . . .	10
VI. Product Output . . . . .	11
VII. Productivity Ratings . . . . .	13
VIII. Requirements for Timber Products . . . . .	14
IX. Use of Forest Survey Findings . . . . .	15
X. Forest Survey Definitions . . . . .	17

CONTENTS -- Continued

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10. Soil Survey Fraser Alpine Area, Colorado; Forest Service-Soil Conservation Service, USDA; Soil Survey Series 1956, No. 20; 1962, 55 pp. illus.

\* Copies attached to original.

## THE NATIONWIDE FOREST SURVEY

### I. Introduction

#### A. Purpose and Scope

The purpose of the Forest Survey is to assemble and maintain information for guiding forest policy and program decisions on national, State, and local levels. This information includes facts about the present timber inventory, supply available, and timber harvests. The future timber supply-demand relationships are also projected. The information is released in periodic reports on national, State, and geographic subdivisions covered by the Survey.

The Forest Survey is one of the major fields of research provided for by the McSweeney-McNary Forest Research Act of May 22, 1928. Section 9 of this basic charter for the forestry research program of the U.S. Department of Agriculture provides:

"The Secretary of Agriculture is authorized and directed, under such plans as he may determine to be fair and equitable, to cooperate with appropriate officials of each State, Territory or possession of the United States, and either through them or directly with private and other agencies, in making and keeping current a comprehensive survey of the present and prospective requirements for timber and other forest products in the United States and its Territories and possessions, and of timber supplies, including a determination of the present and potential productivity of forest land therein, and of such other facts as may be necessary in determination of



ways and means to balance the timber budget of the United States. There is authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, not to exceed \$1,000,000 annually to complete the initial survey authorized by this section: Provided, That the total appropriation of Federal funds under this section to complete the initial survey shall not exceed \$11,000,000. There is additionally authorized to be appropriated not to exceed \$2,500,000 annually to keep the survey current."

This continuing long-range program of applied research is administered primarily through the field experiment stations of the Forest Service. Essentially all of the 775 million acres of forest land in the United States has been inventoried at least once. Resurveys to provide up-to-date information and to determine trends in timber supplies, forestry problems and forest industrial development opportunities are being made at intervals of from 8 to 15 years. These resurvey cycles depend on the rapidity of changes in forest conditions and the nature of wood supply problems in different areas.

B. History

Through the years a number of estimates of the forest resources in the United States -- or in its major forest regions -- have been made. Until authorization of the Nationwide Forest Survey in 1928, these estimates were primarily "guesstimates" by informed people. In some instances they were based on fragmentary field data such as inventories of small tracts of timber.

At fairly frequent intervals since late in the 19th century various public and private agencies were called upon to produce estimates of forest resources. One of the first was in 1880 when C.S. Sargent of Harvard College compiled for the Bureau of the Census the statements of timberland owners and state land agents into volume estimates for certain timber species only. Redwood was the only western species included in these estimates. Another similar survey for certain species was made by Henry Gannett of the Geological Survey in 1900. In 1908 R.S. Kellogg of the Forest Service made the first attempt at a comprehensive estimate of all timber in the country, drawing upon every available source. He recognized, however, that these "... estimates ... are at best only approximate;" and continued with the statement that "... great as the need for it, there has never been a timber census of the United States, nor, with one or two exceptions, any close estimate of the forest resources of any individual State."

So it went, with estimates called for and made every few years, until 1928 when Section 9 of the McSweeney-McNary Forest Research Act called for a comprehensive survey of the requirements for timber and timber supplies. Under an authorization of a total appropriation of \$3 million, and annual appropriations of \$250,000, field work was started in three major forest regions -- the Pacific Northwest, the South and the Lake States in the early 1930's. Within two decades work was expanded into the Northern Rocky Mountains, Central and Northeastern States; and by 1950 initial inventories were completed

in about two-thirds of the forest land in the continental United States. Reinventories had also begun in the South, Northwest, and Lake States to keep resource facts current in pace with activities of forest industries in those regions.

Because of the demand for greater details on the forest and in view of rising costs for production, in 1944 an amendment to the original Act increased authorization for completion of the initial survey to a total of \$6½ million (of which up to \$750,000 could be appropriated annually) and also authorized not more than \$250,000 annually for resurveys. In 1949 the authorization was again increased to provide total appropriations up to \$11 million (with annual authorization of \$1 million) for completing the initial survey and to provide up to \$1½ million annually for resurveys. Subsequently (in 1962) the authorized ceiling for resurveys was boosted to \$2½ million.

By 1963, virtually all the field work had been done in all 50 States on the initial survey although completion of office compilations of the data were scheduled to take another year to two years.

For some years total Survey appropriations have been more than \$1 million annually. During recent years they have been approximately \$1½ million annually. Most of these funds have been expended outside National Forests, since information essentially suitable for Forest Survey purposes is obtained on National Forests as a regular procedure on inventories needed for management planning. Such inventories are coordinated with Forest Survey and both kinds of inventories use similar procedures and standard specifications and definitions.

Forest Survey progress had been significantly supported through the years by cooperation of non-Federal agencies. During the last decade, for example, more than 10 percent of the Survey effort was contributed by such agencies -- mainly by State Conservation Departments. These agencies contributed manpower, funds and loans of equipment with the dual object of speeding completion of surveys and gathering more intensive data on the forest resource than could be financed by Federal money alone.

## II. Planning and Coordination

The Survey is under the general technical direction and coordination of the Forest Survey Branch of the Division of Forest Economics and Marketing Research of the Forest Service, to insure maintenance of national uniformity and comparability in collecting and analyzing resource data. The Survey is conducted as part of the activities of 10 regional Forest Experiment Stations and specifically by regional staffs of the Division of Forest Economics who are responsible for all detailed phases of the work in their respective regions. Each Experiment Station has its own handbooks of procedures and a system of personnel training and inspections to maintain effective work. However, these regional handbooks are expanded within the framework of a National Forest Survey Manual which outlines subject matter standards, definitions and specifications and covers general operational procedures. As part of the national controls, inspections of all phases of the Survey are made periodically by members of the Washington Office of the Forest Service. These inspections not only provide means to insure that field operations are within policy guidelines; they

also provide opportunities for field offices to suggest and receive information on latest survey methodology. In all these contacts attention is given to incorporation of latest proven methods of photogrammetry and statistics and other techniques which can improve efficiency of surveys.

### III. How the Survey of Timber Supplies is Done

Although details of inventory procedures vary somewhat between regions, depending partly on variety of forest conditions, the main phases of the supply inventory are generally the same in all parts of the country. These main phases are: (a) Photo interpretation to collect part of the information on timber supplies, (b) Field sampling to get details on the forest conditions and timber, and (c) Automatic data processing and analysis of results.

#### A. Photo Interpretation

On initial inventories the best recent aerial photography is used. If suitable photography is not available from flights flown for other purposes, photography may be financed from Survey funds or other cooperative funds. Generally photography not more than a few years old and at scales of 1:20,000 or greater has been available.

A systematic pattern of photo plots is located on the photography by using plot templates to sample the gross land area within a project to be surveyed at an intensity of approximately 1 photo plot per square mile or even greater intensity. Each photo plot (representing approximately one acre) is classified according to major land use (commercial and other forest land, agricultural land, waste land, etc.). Any plots falling in doubtful areas are noted so that these locations (or some of them) may be checked later on the ground,

In a common variation of this procedure all photo plots falling on commercial forest are classified further into subclasses based on such items as cover type, stand-size, crown closure and gross volume. The photo sample provides a preliminary basis for obtaining estimates of classes of forest; information from a subsequent more limited field sample is used to adjust these estimates for errors in photo classification. The photo sample also is the basis for stratifying field plots in some significant respect and thus permits more accurate estimates of items determined in the field than if field plots were not stratified. Photo stratification has generally been employed to increase accuracy of timber volume estimates for particular geographic areas such as a county.

In the photo interpretation process a number of aids are used, including magnifying stereoscopes, special templets and measuring scales.

#### B. Field Sampling

Locations of field plots are determined by random or systematic selection from the universe of photo plots falling on forest land. The number of field plots is a small fraction, only, of the total number of photo plots.

Each field plot location is pinpointed on an aerial photo which is used in turn as a reference by the field crew in locating the plot in the field. After the desired location for a field plot has been determined on the ground, the field crew (generally two men) carefully references it on the ground with an appropriate center stake and marks on reference trees, as means of identifying and relocating the plot on a resurvey.

Virtually all field plots are now referenced for use in resurveys to provide accurate and detailed records of changes in the forest with the passage of time.

Each field plot is subdivided into subplots which comprise a heavy sample of the acre classified as the photo plot. Careful measurements and estimates are made on each tree on each subplot to determine a large number of details about the timber such as: tree species, diameter, height (total, utilizable for sawlogs and for other products), amount and kind of defect, and damaging agents, tree vigor, quality and crown class and, for dead trees, estimates of causes of death. Other details are determined and recorded about the plot location, such as the timber-growing capacity of the site, stand age, ecological cover type and condition class. The condition class is based on averages of objective records made at each subplot to indicate whether trees are desirable, acceptable, or culls and whether the subplot is adequately or inadequately stocked. If stocking is inadequate a determination is made of whether the stocking is likely to be improved by natural means or whether some cultural treatment is probably needed such as scarification of the ground, removal of inhibiting cull trees or other vegetation and/or planting or seeding.

Most items are recorded in standard numerical codes to facilitate automatic machine processing of field data.

Field procedures on a reinventory of previously established plots are similar to those on an initial inventory, except that measurements indicate changes in the dimensions or conditions of trees during the

interval between inventories. Those trees cut or dying in the interval provide accurate indications of timber cut on the plot and of mortality due to fire, disease, insects, or other natural causes.

C. Automatic Data Processing and Analysis of Results

After the records of field plot data are edited for completeness they are forwarded to the office where machine punch cards are prepared for each plot and for each tree. These form a master file which is drawn upon for the computations of items needed in standard statistical tables on the timber resource and for special tabulations on modern data processing equipment.

One of the many operations performed during the data processing is to determine areas of various forest and other land use classes by applying adjusted proportions of plots in all classes to the total gross acreage within the inventory project. Also volume (in both cubic and board feet) is computed for every tree recorded on the field plots using formulas based on diameters and lengths of recorded in the field and appropriate factors reflecting variations in form class of trees by species and size. Data on sample plots are also expanded to an acre basis to derive per acre averages which may be applied to appropriate acreages to obtain estimates of total volume of timber in the survey project.

Not only are a number of tables produced which show current areas, volumes, growth, mortality and cut of timber by various categories; projections are also made of future supplies of timber. Starting with current information on inventories, growth, mortality and cutting rates



in the timber, projections are made in increments of short periods of 1 to 5 years under assumed rates of growth and cutting which are changed over time.

#### IV. Ownership of Land and Timber

Areas of the commercial forest lands, and some subclasses of those lands, and main volume growth and cut classes (for the softwood and hardwood groups) are estimated and reported by ownership. The following separate kinds of ownership are recognized: National Forest, Other public, Forest industry, and Farmer and Miscellaneous private. On some inventory projects commercial forest acreages have been broken down by size-class of ownership also (i.e., amounts in tracts less than 25 acres, 25 to 100 acres, 100 to 500 acres, etc.).

Some information on forest ownerships is obtained from interviews with land owners during the course of field work to collect physical data on the forest resource. Much of the information is obtained from county offices holding land records and some from questionnaires mailed to a sample of the owners in a geographic area.

#### V. Timber Losses

Losses of timber due to killing of trees by insects, disease, and fire, weather, animals and other destructive agents are large. Estimates of mortality from these agents indicate that insects generally kill the largest volume of timber, with disease next in importance. Another serious kind of loss, not as spectacular as outright killing of trees, is the loss in growth caused by disease, fire, and insects. An important portion of losses of this kind is the slow down in growth on live trees resulting from lowered

tree vigor, temporary defoliation and reduction in soil productivity after a damaging attack. Other losses result because of delays in restocking of the forest after an attack. The annual loss of volume attributed to growth losses is estimated to be significantly higher than the loss of volume due to mortality. Disease is estimated to be the most serious agent causing growth losses.

Tallies of recently dead trees on field inventory plots provide the basis for estimates of mortality by cause. Estimates of growth loss are more difficult to appraise and are based to a large degree on judgment of experts who specialize in research in forest protection.

#### VI. Product Output

The magnitude of the impact of timber cutting on the forest resource is, of course, indicated by the volume of timber products output, which is indicated in turn by census of the forest industries. The Forest Service makes good use of the data published by the Bureau of the Census such as the periodic estimates of lumber production made by that office. In some instances the Service cooperates with the Bureau of the Census in surveys of lumber production in order to get detailed estimates of production within a State. The Service also find it necessary to conduct some separate canvasses of certain parts of the timber industries, to get estimates of output of such minor timber products as mine timbers, fuelwood and fence posts from producers who are not usually canvassed by the Bureau of the Census. The normal procedure on such canvasses is to canvass all producers (or a large number) by mail questionnaires with a field follow-up of non-respondents.

Particular attention is given to timing of cooperative surveys and separate surveys of timber products output so that they coincide with inventories of the timberlands. This coordination permits the growth of the forest and the drain on that resource to be compared quantitatively.

Before direct comparisons of growth and cut may be made, however, estimates must also be made of the amount of residues of potentially useful wood which remains in the woods due to waste in logging. Special studies are made periodically to determine amounts of residues and thus provide utilization factors which are applied to volume output of timber products to convert it to actual volume of the timber before felling. Generally there is under-utilization, and thus, for example, the measured amount of sawlogs delivered to a mill must be inflated by some percentage to get an estimate of actual timber cut (the fellings).

Cross checks of the estimate of timber cut can be made by estimating what timber volumes were taken from the woods from the evidence of stumps on field inventory plots. Since stump tallies do not indicate what parts of the timber inventory were converted to particular timber products such as saw logs, veneer, pulpwood bolts, etc., periodic canvasses of forest industries continue to be important procedures for estimating all components of timber cut.

Industry canvasses also provide a means of estimating the amount of residues produced at industrial plants during the manufacturing process. One part of the questionnaire used in canvasses of sawmills and other industrial plants is aimed at determining not only the total quantity of residues produced in primary manufacturing (e.g., slabs, and sawdust at

sawmills) but also determining what portion, if any, of these residues is used subsequently. Many slabs and edgings from sawmills, for example, are chipped for use at pulpmills and thus are by-products of sawmills.

## VII. Productivity Ratings

Recently a method was developed and incorporated into Survey procedures for determining key conditions which indicate the current and potential productivity of timberlands. This area condition classification is derived from data collected on standard Survey field plots. The following major classes of condition are recognized. Some classes indicate essentially satisfactory conditions of the timberland, whereas others indicate areas where stand improvement or reforestation measures should be applied to improve productivity of the timberland. Statistics on acreages by these classes are very useful in planning forestry programs:

1. Areas 70 percent or more stocked with desirable trees (i.e., productivity condition good).
2. Areas 40 to 70 percent stocked with desirable trees, and with 30 percent or less of the area controlled by other trees and/or inhibiting vegetation, slash, or other trees and/or conditions that ordinarily prevent occupancy by desirable trees (i.e., current productivity is fair to good with prospect that productivity will increase significantly without cultural treatment).
3. Areas 40 to 70 percent stocked with desirable trees and with more than 30 percent of the area controlled by other trees and/or conditions that ordinarily prevent occupancy by desirable trees (where prospects for future productivity are generally not as good as prospects in previous classes -- cultural treatment needed).

4. Areas less than 40 percent stocked with desirable trees, but with 70 percent or more stocking with growing stock trees (where cultural treatment is desirable for young stands in this class; but where treatment in older stands might best be deferred until harvest cutting for reasons of economy).
5. Areas less than 40 percent stocked with desirable trees, but with 40 to 70 percent stocking with growing stock trees (a somewhat less productivity class than the preceding one; decision on whether treatment is needed varies by age class, also).
6. Areas less than 40 percent stocked with desirable trees and with less than 40 percent stocking with growing stock trees (planting and/or other regeneration treatment is needed to bring forest to satisfactory productivity).
7. Old growth areas 40 percent or more stocked with desirable trees (where cutting might be deferred with little risk of loss in timber values from mortality or growth loss).
8. Old growth areas less than 40 percent stocked with desirable trees (where harvest cutting is needed to minimize loss of values by mortality and to increase productivity).

## II. Requirements for Timber Products

Estimates of potential demand for timber products, together with timber supplies, are necessary to indicate prospective resource problems, to establish timber growth goals, and to guide formulation of forest policies and programs aimed at keeping the Nation's timber budget in balance.

Demand projections are made under specified assumptions of population growth, construction trends and other items. Trends in consumption of forest products such as lumber, veneer and plywood, are determined using data from other special Forest Survey studies, from wood-using industries and from other agencies. Factors influencing wood use such as housing starts and price differentials between wood and substitute construction materials are also studied as bases for projections. Studies of wood consumption are generally made by end uses, i.e., for wood used in manufactured products, for residential construction, on the farm, and for various non-residential construction uses.

#### IX. Use of Forest Survey Findings

Survey information is used by Federal Agencies and Congress and by State Conservation Commissions and legislatures as bases for policy decisions pertaining to forest protection, tree planting, timber management and other measures necessary to balance the timber budget of important forested States and of the Nation as a whole. Forest resource data also constitute guides for short-term emergency programs relating to maintaining timber products output or expansion of forest industry capacity.

Survey findings are also basic to programs of wood-using industries and private forest land owners. Information on timber supplies, timber growth and timber cut provides guides to wood-using industries in answering questions of plant location, wood procurement areas and plans for long-term management.

Among other users of Survey releases are livestock ranchers, real estate operators, timber consultants, bankers, insurance companies, county assessors, railroads and Chambers of Commerce. All these many different

users are interested in accurate, up-to-date information on the timber resources which can only be obtained through a Forest Survey project, as witnessed by the continuing demand for the various kinds of Survey release: analytical and statistical reports on the timber resources and industries of particular States, county statistical reports, and special reports such as the annual report on production of pulpwood for the South which indicate production of pulpwood species groups by county and locations of all pulp-mills. All Survey reports deal with facts on the timber resource and/or timber industries. Some of them have graphic presentations to highlight data in the tables. Some include maps showing distribution of the timber-lands and some go into considerable detail in the text to interpret the significance of the findings.

An example of a report which highlighted and interpreted trends in supplies of timber is "Timber Trends in the Southeast" issued in November 1961. Another example of a special interpretive report is "Potential Timber Supplies and Forest Industrial Development in the Southeast River Basins," issued in February 1961. As implied by the title, this publication contains projections of both timber supplies and demand for several decades.

Periodically, the Forest Service makes comprehensive reports on the National timber situation based largely on Forest Survey information. The latest such report, issued in 1958 as Forest Resource Report No. 14, was "Timber Resources for America's Future." In 700 pages of text, figures, charts, and tables this report covers all aspects of the Nation's timber situation from timber supplies and consumption through growth and utilization, forest protection and future outlook for timber supplies and demand.

## X. Forest Survey Definitions

Acceptable trees. Trees meeting the specifications for growing stock but not qualifying as desirable trees.

Area condition classes. A classification of commercial forest land based upon stocking by desirable trees and other conditions affecting current and prospective timber growth.

Commercial forest land. Forest land which is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation.

Commercial species. Tree species presently or prospectively suitable for industrial wood products; excludes so-called weed species, such as sassafras and hawthorn.

Cull trees. Live trees that are unmerchantable for saw logs now or prospectively because of defect, rot, or species. (Also see Sound cull trees and Rotten cull trees.)

Desirable trees. Growing-stock trees having no serious defects in quality limiting present or prospective use of relatively high vigor and containing no pathogens that may result in death or serious deterioration before rotation age. They include the type of trees forest managers aim to grow, that is, the trees left in silvicultural cutting or favored in cultural operations.

Farmer-owned lands. Lands owned by operators of farms.

Forest industry lands. Lands owned by companies or individuals operating wood-using plants.



Forest land. Land at least 10 percent stocked by forest trees of and size, or formerly having such tree cover, and not currently developed for nonforest use (also see Commercial forest land, Noncommercial forest land, Productive-reserved forest land, and Unproductive forest land).

Forest trees. Woody plants having a well-developed stem and usually more than 12 feet in height, including both growing stock and cull trees.

Forest types. A classification of forest land based upon the species forming a plurality of the stocking in the present tree cover.

Growing-stock trees. Sawtimber trees, poletimber trees, saplings, and seedlings, that is, all live trees except cull trees.

Gross growth. Net annual growth plus annual mortality.

Hardwoods. Dicotyledonous trees, usually broad-leaved and deciduous.

Industrial wood. Commercial roundwood products such as saw logs and pulpwood, but excluding fuelwood and fence posts.

Log grades. A classification of logs based on external characteristics as indicators of quality or value.

Logging residues. The unused portions of cut trees plus unused trees killed by logging and unused trees killed by land-clearing or cultural operations.

Mortality of growing stock. The volume of sound wood in live sawtimber and poletimber trees dying annually from natural causes during a specified period.

Mortality of sawtimber. The net board-foot volume of sawtimber trees dying annually from natural causes during a specified period.

National-Forest lands. Federal lands which have been designated by Executive Order or statute as National Forests or purchase units, and

other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones title III lands.

Net annual growth of growing stock. The annual change in volume of sound wood in live sawtimber and poletimber trees during a specified period resulting from natural causes.

Net annual growth of sawtimber. The annual change in net board-foot volume of live sawtimber trees during a specified period resulting from natural causes.

Net volume. The gross board-foot volume of a tree less deductions for rot, sweep, or other defect affecting use for lumber.

Noncommercial forest land. Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions and productive forest land withdrawn from commercial timber use through statute or administrative regulation.

Nonforest land. Land that does not qualify as forest land. Includes land that has never supported forests and lands formerly forested where forest use is precluded by development for nonforest uses, such as crops, improved pasture, residential areas, and city parks. Also includes improved roads and certain areas of water classified by the Bureau of the Census as land. Unimproved roads, streams, canals, and nonforest strips in forest areas must be more than 120 feet wide, and clearings in forest areas must be more than 1 acre in size, to qualify as nonforest land.

Nonstocked areas. Commercial forest lands less than 10 percent stocked with growing-stock trees.

Ownership. The property owned by one owner, regardless of the number of parcels that it may consist of, in a specified area such as a State or the United States as a whole.

Ownership classes. A classification of forest land based on the following types of ownership:

1. National-Forest lands.
2. Other Federal lands.
3. State, county, and municipal lands.
4. Forest industry lands.
5. Farmer-owned lands.
6. Miscellaneous private lands.

Plant byproducts. Wood material from primary manufacturing plants (such as slabs, edgings, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings at pulp mills) that is used for some product.

Plant residues. Wood material from primary manufacturing plants that is not utilized for some products.

Poletimber trees. Live trees of commercial species at least 5.0 inches in diameter breast height but smaller than sawtimber size, and of good form and vigor.

Quality classes. A classification of sawtimber volumes in terms of specified log or tree grades.

Rotten cull trees. Live trees that do not contain a saw log now or prospectively primarily because of rot.

Roundwood products. Logs, bolts, or other round sections cut from trees.

Saplings. Live trees of commercial species 1.0 inch to 5.0 inches in diameter at breastheight and of good form and vigor.

Saw log. A log meeting minimum approved log grade specifications, or, for species for which approved log grades are lacking, meeting regional utilization standards.

Sawtimber trees. Live trees of commercial species containing at least a 12-foot saw log meeting approved or regional log grade specifications. Softwoods must be at least 9.0 inches in diameter breast height, except in California, Oregon, Washington, and Coastal Alaska where the minimum diameter is 11.0 inches. Hardwoods must be at least 11.0 inches in diameter in all States.

Site classes. A classification of forest land in terms of inherent capacity to grow crops of industrial wood.

Softwoods. Coniferous trees, usually evergreen, having needle or scale-like leaves.

Sound cull trees. Live trees 5.0 inches and larger in diameter at breast height that do not contain a saw log now or prospectively primarily because of roughness, poor form, or noncommercial species.

Stand treatment classes. A classification of forest land in terms of cultural measures required to increase harvest yields of desirable trees.

Stocking. A measure of area occupancy by trees of specified classes. Three categories of stocking are considered in the Survey: (1) all live trees, (2) growing-stock trees, and (3) desirable trees. Stocking in terms of all trees is used in the delineation of forest land and forest types. Stocking in terms of growing-stock trees is used in stand-size and

age classifications. Stocking in terms of desirable trees is used in delineating area condition and stand treatment classes.

Stocking percentage. Current area occupancy or stocking in relation to specified stocking standards.

Stocking standards. The number, size, and spacing of trees considered necessary to make effective use of specified forest types and sites.

Timber cut from growing stock. The volume of sound wood in live sawtimber and poletimber trees cut for forest products during a specified period, including both roundwood products and logging residues.

Timber cut from sawtimber. The net board-foot volume of live sawtimber trees cut for forest products during a specified period, including both roundwood products and logging residues.

Timber products. Roundwood products and byproducts of wood manufacturing plants.

Tree size classes: A classification of trees chiefly according to diameter at breast height outside bark, including sawtimber trees, poletimber trees, saplings, and seedlings.

Unproductive forest land. Forest land incapable of yielding crops of industrial wood because of adverse site conditions.

Volume of growing stock. Volume of sound wood in the bole of sawtimber and poletimber trees from stump to a minimum 4.0-inch top outside bark or to the point where the central stem breaks into limbs.

Volume of sawtimber. Net volume of the saw-log portion of live sawtimber trees, in board feet International 1/4-inch rule.

Volume of timber. The volume of sound wood in the bole of growing stock, cull, and salvable dead trees 5.0 inches and larger in diameter at breast height, from stump to a minimum 4.0-inch top outside bark or to the point where the central stem breaks into limbs.

Productive-reserved forest land. Productive public forest land withdrawn from timber utilization through statute or administrative regulation

11/17/71  
Phil Perkins

Here is a piece of  
work that was part  
of a project by an ad  
hoc group in Washington  
— Came from George Burks  
old Division of Program  
Planning & Spec Projects  
might be worth keeping  
somewhere —

PS

[PHILIP  
THORNTON]